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The phi meson in nuclear matter from a transport approach

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While phi meson vacuum properties, such as mass and width, are well known, it is not clear how these properties will change once it is put in an extremely dense environment such as nuclear matter. To study how the phi meson behaves at finite density has been the goal of several recent and near future experiments at multiple facilities [1-3]. Theoretically, many works have been conducted with the aim of studying the phi meson in nuclear matter. Connecting theoretical results with experimental measurements is, however, not a trivial task, as the phi meson in nuclear matter is usually produced in relatively high-energy pA reactions, which are generally a non-equilibrium processes. In this presentation I will report on an ongoing project [4], attempting to simulate pA reactions in which the phi meson is produced in nuclei, making use of a transport approach [5]. First results of simulations of 12 GeV p+C and p+Cu reactions will be presented and comparisons between obtained dilepton spectra and experimental data of the E325 experiment at KEK [1] will be made. [1] R. Muto et al., Phys. Rev. Lett. 98, 042501 (2007). [2] A. Polyanskiy et al., Phys. Lett. B 695, 74 (2011). [3] S. Ashikaga et al., (J-PARC E16 Collaboration), JPS Conf. Proc. 26, 024005 (2019). [4] P. Gubler and E. Bratkovskaya, in progress. [5] W. Cassing and E.L. Bratkovskaya, Nucl. Phys. A 831, 215 (2009).

Presenter: GUBLER, Philipp (JAEA)